

Claims

What is claimed is:

1. A method for identifying cell matrix signaling (CMS) pathway induced
5 genes that are modulated during vascular or proliferative diseases and related
disorder comprising:
 - a) adding vascular disease stimuli to a first cell culture of endothelial
cells;
 - b) adding vascular disease stimuli to a second cell culture of smooth
10 muscle cells;
 - c) adding vascular disease stimuli to a third cell culture of
endothelial cells and smooth muscle cells in co-culture;
 - d) measuring the amount of vascular disease markers in a), b), and c);
and
 - 15 e) comparing the amount of the vascular disease markers in a), b) and
c) to co-cultures of untreated cells or co-cultures.
2. The method of Claim 1, wherein the vascular disease stimuli is AGE, insulin
or TNF- α or a combination thereof.
3. The method of Claim 1, wherein the vascular disease marker is interleukin 6
20 (IL-6), interferon-inducible protein-10 (IP-10), monokine induced by gamma-
interferon (MIG), interferon-inducible T-cell alpha chemoattractant (I-TAC),
vascular adhesion molecule-1 (VCAM-1), or monocyte chemoattractant protein-1
(MCP-1).
4. The method of Claim 1, wherein the smooth muscle cells are layered over the
25 endothelial cells in co-culture.
5. The method of Claim 4, wherein the smooth muscle cells and the endothelial
cells are layered in a specific ratio.
6. The method of Claim 5, wherein the ratio is 1:1, 1:2, 1:3, or 1:4.

7. A method for identifying compounds that regulate CMS pathway induced genes comprising:
- a) adding vascular disease stimuli and a test compound with unknown effects on endothelial cells to a first cell culture of endothelial cells;
 - 5 b) adding vascular disease stimuli and a test compound with unknown effects on smooth muscle cells to a second cell culture of smooth muscle cells;
 - c) adding vascular disease stimuli and a test compound to a third cell culture of endothelial cells and smooth muscle cells in co-culture;
 - 10 d) measuring the amount of vascular disease markers in a), b) and c); and
 - e) comparing the amount of the vascular disease markers in a), b) and c) to controls of untreated cells and co-cultures.
8. The method of Claim 7, wherein the vascular disease stimuli is AGE, insulin or TNF α or a combination thereof.
- 15 9. The method of Claim 7, wherein the vascular disease marker is IL-6, IP-10, MIG, I-TAC, VCAM-1, or MCP-1.
10. The method of Claim 7, wherein the test compound is an oligonucleotide, ribozyme, antisense oligonucleotide, peptide, peptoid, small organic molecule or small inorganic molecule.
- 20 11. The method of Claim 10, wherein the test compound is an oligonucleotide complementary to the 5' region of the CMS pathway induced gene.
12. The method of Claim 10, wherein the test compound is a ribozyme molecule that blocks translation of the CMS pathway induced gene.
13. The method of Claim 10 wherein the test compound binds the protein
- 25 product of the CMS induced gene.
14. A method for diagnosing a vascular or proliferative disease or a related disorder comprising:

- a) measuring the level of transcription of CMS pathway induced genes present in a patient or patient sample and in a corresponding control sample;
 - b) comparing the level of CMS pathway induced genes transcript in both samples, wherein if the level of transcript detected differs in the patient sample relative to the corresponding control sample, a vascular disease or a related disorder is diagnosed.
15. A method for diagnosing a vascular or proliferative disease or a related disorder comprising:
- a) measuring CMS pathway induced gene product protein level or protein activity present in a patient or patient sample and in a corresponding control sample; and
 - b) comparing the CMS pathway induced gene product protein level or protein activity in both samples, wherein if the level of protein or protein activity detected differs in the patient or patient sample relative to the corresponding control sample, a proliferative disease or an oncogenic related disorder is diagnosed.
16. A method for monitoring the efficacy of treatment for a vascular or proliferative disease or related disorder comprising:
- a) measuring the amount of vascular disease markers in a patient sample from a patient with a vascular disease, proliferative disease, or related disorder;
 - b) treating a patient;
 - c) measuring the amount of vascular disease markers in patient samples taken during treatment; and
 - d) comparing the amount of vascular disease markers in a) to c).
17. The method of Claim 16, wherein the vascular disease marker is IL-6, IP-10, MIG, I-TAC, VCAM-1, or MCP-1.